



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,711	10/29/2003	Cechan Tian	064731.0378	5574
5073	7590	12/06/2006	EXAMINER	
BAKER BOTTS L.L.P. 2001 ROSS AVENUE SUITE 600 DALLAS, TX 75201-2980			TARANINA, MARINA Y	
			ART UNIT	PAPER NUMBER
			2613	

DATE MAILED: 12/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/695,711

Applicant(s)

TIAN ET AL.

Examiner

Marina Taranina

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/16/2004, 4/12/2004, 4/20/2004, 9/22/2004, 6/23/2005, 10/26/2005, 5/24/2006, 7/31/2006, 9/21/2006.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: reference to 110 (managing element), recited on page 13 lines 15-16 of specification is missing in fig. 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Art Unit: 2613

3. Claims 35 and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Tian (US 2004/0052530).

(1) With respect to Claim 35 and 41, Tian discloses an optical network, comprising: an optical ring operable to communicate optical traffic (fig. 1, 5, page 2 para 0024);

a plurality of nodes coupled to the optical ring (page 2 para 0026 lines 1-3), each node operable to passively add and drop one or more traffic streams to and from the optical ring, each traffic stream comprising at least one channel (fig. 5, page 2 para 0031 lines 1-7), the plurality of nodes comprising:

a plurality of hub nodes (30 and 32 in fig. 5) operable to selectively pass or terminate a plurality of individual sub-bands of the optical traffic (page 2 para 0031 lines 4-7) ;

and a plurality of sub-band nodes each operable to terminate a respective sub-band of the optical traffic (24 and 36 in fig. 5, page 2 para 0031 lines 7-10);

wherein the plurality of hub nodes form a plurality of photonic domains (working path and protection path) each operable to communicate different traffic streams in the same sub-bands without interference (page 5 para 0057, 0058).

(2) With respect to Claim 36 (36/35) and 42 (42/41), Tian discloses the optical network of claim 35, wherein the plurality of hub nodes comprises two hub (22 and 18 in fig. 2) nodes that form two photonic domains (working path and protection path).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-34 are rejected under 35 U.S.C. 103 (a) as being as being unpatentable over Elbers (US 2003/0128985 – see IDS dated 21 Sep 2006) in view of Koehler (US 6 426 815).

(1) With respect to Claims 1, 16 and 23, Elbers discloses an optical network, comprising: a plurality of nodes, each node operable to passively add and drop one or more traffic streams, each traffic stream comprising at least one channel (page 2 para 0018 lines 1-7, para 0019 –all); and the plurality of nodes comprising: a hub node operable to selectively pass or terminate (by filtering and/or switching) a plurality of individual sub-bands of the optical traffic (fig. 2, page 4 para 0043 lines 1-5, para 0045 lines 1-2) ; and a plurality of sub-band nodes (add-drop stages with local functionality) each operable to terminate (by filtering) a respective sub-band of the optical traffic (page 4 para 0040 lines 11-13, para 0045 lines 3-9).

Elbers does not teach an optical ring operable to communicate optical traffic comprising plurality of nodes with different functionality.

However, Koehler teaches a ring transmission system comprising plurality of nodes with different functionality (fig. 1, col. 2 line 66 – col. 3 line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Elbers' optical network nodes into the transmission ring system of Koehler as to increase flexibility and capacity of the network.

(2) With respect to Claim 2 (2/1), 17 (17/16) and 24 (24/23), Elbers discloses the subject matter of corresponding preceding claims, and further teaches a coupler node operable to drop and continue optical traffic passing through the coupler node (fig. 3, page 4 para 0048).

(3) With respect to Claim 3 (3/1), 18 (18/16) and 25 (25/23), Elbers discloses the subject matter of corresponding preceding claims, and further teaches the hub node comprising: a demultiplexer operable to demultiplex the optical traffic into its constituent sub-bands (SDMUX in fig. 2, page 4 para 0038 lines 1-5); a plurality of switches each operable to pass or terminate a respective sub-band (ZE in fig. 2, 4, page 5 para 0051 lines 8-12); and a multiplexer operable to multiplex each sub-band passed at the plurality of switches for communication on the optical ring (SMUX in fig. 2, page 4 para 0038 lines 1-5).

(4) With respect to Claim 4 (4/3/1), 11 (11/10/8), 15 (15/14/12) and 19 (19/18/16), Elbers discloses the subject matter of corresponding preceding claims, but fails to teach that the demultiplexer and the multiplexer comprise array waveguides.

However, Koehler teaches optical demultiplexer (122 in fig. 2) comprising array waveguides (arrayed waveguide router, col. 3 lines 32-24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Elbers' by employing array waveguides as a multiplexer and/or demultiplexer as taught by Koehler as to increase transmission capacity of the network.

(5) With respect to Claim 5 (5/1), 20 (20/16), and 26 (26/23), Elbers discloses the subject matter of corresponding preceding claims, and further teaches sub-band node (add-drop stages with local functionality) comprising a sub-band filter operable to block optical traffic in a respective sub-band (page 4 para 0045 lines 3-18).

(6) With respect to Claim 6 (6/1), 21 (21/16), and 27 (27/23), Elbers discloses the subject matter of corresponding preceding claims, and further teaches a combination sub-band node operable to terminate a plurality of sub-bands of the optical traffic (page 4 para 0045).

(7) With respect to Claim 7 (7/6/1), 22 (22/21/16), and 28 (28/27/23), Elbers discloses the subject matter of corresponding preceding claims, and further teaches combination sub-node comprises a plurality of cascaded sub-band filters each operable to block optical traffic in a respective sub-band (page 4 para 0045 lines 1-11).

(8) With respect to Claims 8 and 29, Elbers discloses an optical network, comprising: a plurality of nodes, each node comprising at least one transport element (circuit with add-drop functionality) operable to passively add and drop one or more traffic streams to and from the optical ring, each traffic stream comprising at least one channel (page 2 para 0018 lines 1-7, para 0019 –all);



Art Unit: 2613

and the plurality of nodes comprising a combination node, the combination node comprising:

a coupler node transport element (a circuit with drop and continue functionality) operable to drop and continue optical traffic passing through the coupler node transport element (fig. 3, page 4 para 0048).

and a hub node transport element (central element) operable to selectively pass or terminate a plurality of individual sub-bands of the optical traffic (fig. 2, page 4 para 0043 lines 1-5, para 0045 lines 1-2);

Elbers does not teach (A) an optical ring operable to communicate optical traffic comprising plurality of nodes with different functionality; and (B) that a hub node transport element is cascaded with the coupler node transport element.

However, Koehler teaches (A) a ring transmission system comprising plurality of nodes with different functionality (fig. 1, col. 2 line 66 – col. 3 line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Elbers' optical network nodes into the transmission ring system of Koehler as to increase flexibility and capacity of the network.

Furthermore, with respect to item (B) the hub node transport element being cascaded with the coupler node transport element is a matter of design choice, structure and functionality of the network.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to use a hub node transport element cascaded with the coupler node transport element as to increase flexibility of the network.

(9) With respect to Claim 9 (9/8), 13 (13/12), 30 (30/29) and 33 (33/32), Elbers discloses the subject matter of corresponding preceding claims, and further teaches a plurality of sub-band nodes (add-drop stages with local functionality) each operable to terminate (by filtering) a respective sub-band of the optical traffic (page 4 para 0040 lines 11-13, para 0045 lines 3-9).

(10) With respect to Claim 10 (10/8), 14 (14/12), 31 (31/29) and 34 (34/32), Elbers discloses the subject matter of corresponding preceding claims, and further teaches a hub node transport element comprising a demultiplexer operable to demultiplex the optical traffic into its constituent sub-bands (SDMUX in fig. 2, page 4 para 0038 lines 1-5); a plurality of switches each operable to pass or terminate a respective sub-band (ZE in fig. 2, 4, page 5 para 0051 lines 8-12); and a multiplexer operable to multiplex each sub-band passed at the plurality of switches for communication on the optical ring (SMUX in fig. 2, page 4 para 0038 lines 1-5).

(11) With respect to Claims 12 and 32, Elbers discloses an optical network, comprising: a plurality of nodes, each node comprising at least one transport element (circuit with add-drop functionality) operable to passively add and drop one or more traffic streams to and from the optical ring, each traffic stream comprising at least one channel (page 2 para 0018 lines 1-7, para 0019 –all); and the plurality of nodes comprising a combination node, the combination node comprising:

Art Unit: 2613

a sub-band node transport element (add-drop stage with local functionality) operable to terminate (by filtering) a respective sub-band of the optical traffic (page 4 para 0040 lines 11-13, para 0045 lines 3-9);

and a hub node transport element (central element) operable to selectively pass or terminate a plurality of individual sub-bands of the optical traffic (fig. 2, page 4 para 0043 lines 1-5, para 0045 lines 1-2);

Elbers does not teach (A) an optical ring operable to communicate optical traffic comprising plurality of nodes with different functionality; and (B) that a hub node transport element is cascaded with the coupler node transport element.

However, Koehler teaches (A) a ring transmission system comprising plurality of nodes with different functionality (fig. 1, col. 2 line 66 – col. 3 line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Elbers' optical network nodes into the transmission ring system of Koehler as to increase flexibility and capacity of the network.

Furthermore, with respect to item (B) the hub node transport element being cascaded with the sub-band node transport element is a matter of design choice, structure and functionality of the network.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a hub node transport element cascaded with the sub-band node transport element as to increase flexibility of the network.

Art Unit: 2613

6. Claims 37 and 43 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Tian (US 2004/0052530).

(1) With respect to Claims 37 (37/35) and 43 (43/41), Tian discloses the subject matter of corresponding preceding claims, and further teaches three hub nodes (22, 18 and 32). Tian does not teach three photonic domains.

However, it is a matter of a design choice and structure of a network to assign photonic domains (read as signal paths) between nodes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use three photonic domains to improve reliability of the network.

7. Claims 38-40 and 44-46 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Tian (US 2004/0052530) in view of Elbers (US 2003/0128985 – see IDS dated 21 Sep 2006).

(1) With respect to Claim 38 (38/35) and 44 (44/41), Tian discloses the subject matter of corresponding preceding claims, but fails to teach a hub node comprising: a demultiplexer operable to demultiplex the optical traffic into its constituent sub-bands; a plurality of switches each operable to pass or terminate a respective sub-band; and a multiplexer operable to multiplex each sub-band passed at the plurality of switches for communication on the optical ring.

However, Elbers teaches a hub node comprising: a demultiplexer operable to demultiplex the optical traffic into its constituent sub-bands (SDMUX in fig. 2, page 4

para 0038 lines 1-5); a plurality of switches each operable to pass or terminate a respective sub-band (ZE in fig. 2, 4, page 5 para 0051 lines 8-12); and a multiplexer operable to multiplex each sub-band passed at the plurality of switches for communication on the optical ring (SMUX in fig. 2, page 4 para 0038 lines 1-5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a hub node as taught by Elbers in to the system of Tian as to increase the capacity of the network while maintaining its cost-effectiveness.

(2) With respect to Claims 39 (39/38/35) and 45 (45/44/41), Tian discloses the subject matter of corresponding preceding claims and further teaches plurality of reconfigurable switches to provide optical shared path protection in the event of an error in the network (page 2 para 0060).

(3) With respect to Claims 40 (40/39/38/35) and 46 (46/45/44/41), Tian discloses the subject matter of corresponding preceding claims and further teaches the error comprising a fiber cut (page 2 para 0047 lines 15-19, para 0048).

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

EP 0 905 936 discloses WDM optical network with passive pass-through at each node;  
US 6 136 527 discloses optical bi-directional line switched ring data communication system;

Art Unit: 2613

US 5 986 783 discloses method for protection and restoration of optical communication networks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marina Taranina whose telephone number is (571) 270-1085. The examiner can normally be reached on Mon-Fri (alternative Fri off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

16 Nov 2006  
mt



KENNETH VANDERPUYE  
SUPERVISORY PATENT EXAMINER